Chapter II

Higher Education and Economic Development
Economic development is a process involving on the one hand physical growth in per capita output in the economy, that is economic growth, and on the other, availability of a variety and better quality of that output. It is accompanied by an improved institutional set up, a more literate, enlightened and healthy population, disappearance of archaic and traditional institutions, adoption of new and modern techniques of production and distribution, and such institutions that help the economy move along the path of progress. In this process a crucial role is played by investment, both in its physical form or what we call capital investment and secondly (and according to some, more importantly,) human capital or investment in man.

Investment in human capital may take several forms, the most important being investment in education. Education at the base level or primary education is very important as it helps in removing the stranglehold of traditions, which characterize the society in underdeveloped countries and is inimical to growth and development. Education at the secondary level provides the base for higher and technical education. Higher education is important as it provides manpower for higher cadre posts both in the private and public sectors. It fastens and facilitates the process of national development by encouraging scientific temper in students and inculcating in them the urge to develop, to progress, to be able to live a satisfying existence.

Approaches to Education and Economic Development

That education and economic development (which includes economic growth) are positively correlated is accepted by all. What is significant in this
context is how to assess the contribution of all kinds of education to economic growth. Various studies that have attempted to make such an assessment have taken into account the following approaches:

(i) simple correlation approach
(ii) the residual approach
(iii) returns to education approach.

(i) Simple Correlation Approach

This makes an attempt to correlate some index of educational activity with some index of the level of economic activity, such as level of literacy and per capita incomes of different countries may be compared with each other to find out that level of literacy which will help in achieving a high rate of growth. Similarly any other index like percentage of GNP spent on education may be correlated to per-capita GNP or level of education to per capita income.

In a study Anderson and Bowman (1950) compared the literacy level of 83 countries with GNP per capita and came to the conclusion that there is a threshold level of literacy below which no country can achieve growth. The countries were classified into three - poor, rich and middle level and their literacy levels were compared with per capita incomes. The following data was given:

Table 2.1

<table>
<thead>
<tr>
<th>Classification</th>
<th>Literacy Level</th>
<th>GNP ($) per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>31 poor countries</td>
<td>Below 40%</td>
<td>Under 300</td>
</tr>
<tr>
<td>24 rich countries</td>
<td>Above 70%</td>
<td>Above 700</td>
</tr>
<tr>
<td>27 middle-level countries</td>
<td>40 to 69%</td>
<td>Not very definite</td>
</tr>
</tbody>
</table>

Studies conducted in India also came to similar conclusions. A positive correlation between education and earnings was brought out by VKRV Rao in his socio-economic survey of Delhi. He came to the conclusion that income differentials are found to exist between people with different levels of education. Such differentials are also found in the level of earning of technical and non-technical personnel.¹

Another study on Bombay by Panchmukhi clearly brings out that people with no formal education earned much less than those with formal education and that higher the level of education, higher were the earnings of workers. This is shown in Table 2.2

Table 2.2
Level of Education and Annual Income

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>Income (in Rs.) before tax (1970-71)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No formal education</td>
<td>2900</td>
</tr>
<tr>
<td>Up to primary education</td>
<td>3100</td>
</tr>
<tr>
<td>Up to secondary education</td>
<td>3500</td>
</tr>
<tr>
<td>Up to higher secondary</td>
<td>5500</td>
</tr>
<tr>
<td>Graduates and above</td>
<td>8200</td>
</tr>
</tbody>
</table>

Source: Same as Table 2.1

Income differentials on account of different educational levels are calculated in the study by I.Z. Husain on "Returns to Education in India." Table 2.3 brings out the differences in the earnings of workers with different levels of education.

Table-2.3

Average and Differential Annual Earnings Per Worker on Maturity in 1960-61

<table>
<thead>
<tr>
<th>Earner</th>
<th>Average</th>
<th>Differential over uneducated</th>
<th>Differential over matriculate</th>
<th>Differential over General Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Average uneducated Workers</td>
<td>462.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Matriculates</td>
<td>1631.4</td>
<td>1168.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Graduates</td>
<td>2634.0</td>
<td>2171.5</td>
<td>1002.6</td>
<td></td>
</tr>
<tr>
<td>4. Post-graduates (General)</td>
<td>3254.4</td>
<td>2791.9</td>
<td>1623.0</td>
<td>620.4</td>
</tr>
<tr>
<td>5. Professional Graduates</td>
<td>4880.4</td>
<td>4417.9</td>
<td>3249.0</td>
<td></td>
</tr>
</tbody>
</table>


The table clearly shows that there is a positive correlation between the earnings of workers and their level of education. As the level of education increases from matriculate to graduate and further to post-graduate, the differences in the earnings over uneducated workers becomes more prominent.

The above methods, though they may establish a strong correlation between education and economic growth do not tell us anything about the causal

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relationship between the two. The problem remains as to whether education is the cause of economic growth or vice versa.

(ii) Residual Approach

Empirical studies conducted in U.S.A revealed that increase in output had taken place over a period of time without a corresponding increase in the inputs in terms of labour and capital. This unexplained increase in the output was on account of what E.F. Denison termed as the "residual factor" which was identified as education and advances in technology. He used the Cobb Douglas production function in calculating the value of the residual factor for U.S.A. for the period 1927 to 1957. The average growth rate during the period could not be accounted for by the contribution of the factors of production, namely, land, labour and capital. The average growth rate worked out to be 2.9% and the value of the residue was little more than 2%, which according to him was on account of advancement in knowledge. This formed the basis of the approach, and along these lines further research was conducted as there was a growing interest in investment in human resources, and educational expenditure came to be regarded as an important form of investment.

(iii) Returns to Education or Investment in Human Capital Approach

Education yields positive direct and indirect returns to the educated person. Direct returns which are in the form of increased earnings are easily quantifiable. Indirect returns, though important, are not amenable to measurement. They may be in the form of an enlightened electorate, greater tolerance among people, hence less frictions, and, therefore, an amicable and conducive environment in which development can take place. It has been found that education yields a high rate of return on investment. The monetary returns in the form of lifetime earnings to the individual far exceed the cost of education. The rate of return approach is of use in assessing the contribution of
education to economic growth. Equally important is its usefulness in determining how much is to be invested in education vis a vis other sectors of the economy. It is important to differentiate between returns to the individual and to the society at large. This approach though theoretically sound has been criticized on the following grounds. Firstly, it fails to consider the non-economic intangible benefits of education, which are of special significance in underdeveloped countries. In these countries deep-rooted beliefs and traditions have a strong hold on society and they act as a great obstacle to growth and development. For instance, it is increasingly being felt that in India education, especially of women, is of crucial importance to make the family planning programme effective. Secondly, the data is difficult to obtain for a precise calculation of the returns attributable to education.

The inter-relationship between education and economic growth has come up for criticism. It is felt by some that the role of capital has been underestimated by Denison and others who have identified education as the "residual factor" in economic growth. It is also felt that education has been viewed as a homogenous factor in economic growth. Its structure and quality have not been taken into consideration. The quantity of education alone may not be enough for effecting economic growth. The quality of education is equally important, as is the need to make it more appropriate to the specific needs of the countries concerned.

**Higher Education and Economic Development**

The connection between education and development has been observed and examined in many ways. The discussion in one form or the other existed even in old literature of Economics, but meaningful attention was given much later. As is too well known after the Second World War economists concentrated their attention on building up a theory of development based solely on physical investment. Little or no attention was paid to contribution made by human capital
in the development process although its existence had been recognized by the classical economists as well as by economists of later period. Several studies on economic growth in advanced countries in the 1950's revealed that output had increased at a higher rate than could be explained by an increase in the input of labour and capital. Among other factors, and in fact, more significant, were considered improvements in intangible human qualities.³

Some economists challenged the exclusive role in economic development being assigned to physical capital. The concept of capital investment widened to include, besides physical investment, "investment in man", also referred to as investment in human resources, which may take several forms. Though expenditure on health is an integral part of such investment, education has been in the spotlight. Some of the economists who support the investment theory of education are Kuznets, Schultz, Myers, Anderson, Lewis etc.

Education acts upon and improves human resources in different ways. It has a direct bearing on the quality of human resources. Diffusion of new ideas and objectives through investment in knowledge is necessary to remove economic backwardness. It raises the level of productivity, enhances both in quantity and quality the occupational skills of individuals. All forms of education, together with imparting skills, improve attitudes as well. Education brings about an inculcation of right attitudes towards life and work. An improvement in the quality of the "human factor" is thus as essential as investment in physical capital. Expenditures on education and training yield a continuing return in the future and it is for this reason that they are now considered to be an integral part of capital expenditures in an economy. An improvement in human capabilities thus improving the quality of labour is as important as improvements in tangible physical capital and hence investments in it. It is now increasingly recognized that

shortage of skills and knowledge and not so much shortage of savings in many under developed countries are responsible for their inability to absorb capital in productive investment. "Thus attention has shifted from capital to education, from investment in material capital to investment in human capital. This is a great advance on the older approach of trying to mobilize the brawn power rather than the brain power of the people of the under developed countries."\footnote{Myint, Hla.: \textit{The Economics of the Developing Countries}, Fredrick A Praeger, Publishers, New York, Washington, 1965, p.173.}

The same emphasis on quality of human resources is given by Prof. Schultz in the following example. "Suppose that by some miracle India, or some other low income country like India, were to acquire as it were overnight a set of natural resources, equipment and structures including techniques of production comparable per person to ours what could they do with them given the existing skills and knowledge of the people? Surely the imbalance between the stock of human and non-human capital would be tremendous."\footnote{Schultz, TW.: "Reflections on Investment in Man" \textit{Journal of Political Economy}, September, October, 1962, pp.2-3.}

Accordingly from the sixties onwards serious thought has been devoted to education as an important component of investment. "Direct expenditures on education, health, and internal migration to take advantage of better job opportunities are clear examples" of investment in human capital according to Schultz. To these he adds earnings foregone by mature students, on the job training acquired by workers as well as use of leisure time to improve skills. Such investment in human capital improves the quality of human effort, enhances its productivity and "accounts for most of the impressive rise in the real earnings per worker."\footnote{Schultz, TW.: "Investment in Human Capital", \textit{American Economic Review}, Volume L1, March 1961 Number one, pp. 1-17.}
Role of Education: Nature and Magnitude

It has always been interesting and useful to discuss what higher education is. Is it consumption, investment or social investment? It, in general, encompasses all the qualities, which can possibly place it in any of the above categories.

R.A. Musgrave for instance discusses at length about the components of education, namely, education (a) as consumption (enjoyment of fuller life permitted by education) (b) as investment (with gains accruing "internally" in the form of increased earning to the educated person), (c) as investment in the functioning of the economic and social system at large (with gains accruing 'externally' in the form of its impact on other members of the community).

The educational expenditure has features of both consumption and investment. In fact the consumption aspect itself consists of current consumption - the delights of attending school, according to Musgrave, and future consumption which enables an individual to enjoy a better life later on which makes education a consumer durable. Thus the distinction between the consumption and investment aspect of educational expenditure is only a superficial one. The distinction is between educational investment that enables one to lead a fuller life in future (imputed income), and educational investment that generates increased earnings for the educated person.\(^7\)

In estimating the magnitude of human investment Prof. Schultz also distinguishes between educational expenditure for consumption and for investment. He classifies educational expenditure into three kinds.

(a) Expenditures undertaken by consumers based purely on their preferences, which, according to Schultz represent pure consumption. These do not enhance capabilities of individuals.

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(b) Expenditures undertaken to enhance capabilities, and do not satisfy any preferences underlying consumption, which represent pure investment

(c) Expenditures which have both effects.\(^8\)

Most relevant activities according to Schultz belong to the third category. This makes difficult the task of identifying the components of education. The measurement of capital formation by expenditure, a useful method for physical capital, is not so for human investment. Yield on such investment, as reflected in enhanced earnings is a better method for estimating human investment. Activities/expenditures that improve human capabilities include health facilities, on the job training organized at the workplace, all types of formal education, programmes of adult education including extension programmes, especially in the agricultural sector, migration of individuals to avail of changing job opportunities, etc. Expenditures on health and nutrition enhance capabilities, and raise productivity of workers. In fact in some poor countries more food may actually be regarded as "producer good". However, it is expenditures on education and training of different types on which attention has been focussed while discussing human capital formation. The other factors mentioned above, though they have an important bearing on human capabilities, their contribution to productivity is less amenable to measurement. Investment in human capital is different from investment in physical capital in at least two respects. When the choice is between different forms of investments on account of resource constraint, the differences acquire significance. Firstly, in the case of investments in human capital, the criterion of profitability, which is relevant for physical investments, is less important. Investment decisions are guided by costs and benefit, the latter being more in an intangible form. Secondly, spillover effects of investment in education are much more far-reaching than that of others. Even when the recipients of

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\(^8\) T.W. Schultz.: op.cit.
education do not contribute to production by entering the workforce, the change in their attitudes and outlook towards work and progress is easily perceptible and it helps to create the right type of environment in which development can take place.

Costs and Benefits of Education

Costs and benefits of education may be examined for an individual or for the society as a whole. First consider the cost aspect of education. The cost of education may be social or private. Government expenditure on education or what may be called institutional costs are in the form of salaries of teachers, administrative and other non-teaching staff, cost of maintaining libraries and laboratories, maintenance and operational costs of the entire education system, expenditure on hostels and other student amenities, etc. Since the major part of government's expenses are met out of tax revenues, these costs are ultimately borne by the society. Private costs of education include tuition and other fees paid by students, earnings foregone and incidental expenses which may include expenses on travel, stationery, etc.

Costs of Education

Costs of education are summarized below

<table>
<thead>
<tr>
<th>Private</th>
<th>Social or Institutional</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Tuition &amp; other fee</td>
<td>a) Salaries of teaching &amp; Non-Teaching Staff</td>
</tr>
<tr>
<td>b) Books &amp; Stationary</td>
<td>b) Library &amp; Laboratory</td>
</tr>
<tr>
<td>c) Incidental Expenses</td>
<td>c) Maintenance &amp; Operational cost</td>
</tr>
<tr>
<td>d) Earnings foregone</td>
<td>d) Hostel &amp; Student amenities</td>
</tr>
</tbody>
</table>

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Of the total costs of education, it is not difficult to estimate the conventional costs of education. However, it is difficult to estimate the earnings foregone by students, an important component of education. This component, according to Schultz, is far from negligible. He estimates that for the United States, by 1956, it represented over two fifths of all costs. According to Psacharopoulos, international comparisons show that the proportion of earnings foregone to total educational cost, is about 66% at the secondary level, and one half of total investment at the level of higher education in countries of high and middle income group. In low-income countries, the proportions are lower, 50% at the secondary level and about 35% at the higher education level.

Analysis of costs is an integral part of educational management. Not only does it give us an idea of the total requirement of funds in the educational sector, it also gives us the extent of burden of educational expenditure on the government, how we can justify this expenditure in a poor country like India where many areas are wanting government's attention. Is it possible/desirable to shift a part of the burden to individuals? If so, how much of the burden can be shifted? These are relevant aspects, which need to be examined. Besides this, unit cost of educational expenditure is also calculated. We may thus calculate the educational cost per student, or per course, or per institution. This is required to work out financial allocations and costing of educational schemes to study the efficiency level of an institution, to improve the optimum utilization of resources and to evaluate the input-output design.

Benefits of Education: Contribution to Economic Growth

Benefits of education may be direct and indirect, social or private, tangible or intangible. Generally speaking direct benefits are private, i.e., they are enjoyed

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9 Schultz, T.W.: op.cit.
by the individuals in the form of higher earnings, occupational flexibility, better status, cultural refinement, etc. Indirect benefits are enjoyed both by the individuals as well as by the society. An enlightened population willing to accept new ideas, new challenges, greater tolerance which goes to ease communal tensions, improvement in social and cultural levels, promotion of democratic values, positive thinking and behaviour of people, productive use and enjoyment of leisure are some of the spill over benefits to society which are at the same time enjoyed by the individuals as well. These intangible benefits, though not amenable to measurement, have a powerful effect on society and on the economy. It creates the right type of environment, which promotes development in the economy. In fact it is these changes which bring out the difference between economic growth and economic development.

A relevant question regarding educational investment is related to the stage of economic development at which intangible capital formation becomes significant. So far as the early period of industrialization in Western Europe is concerned, or even that of United States, the contribution of education to economic growth became significant at a fairly advanced stage of development. However, in the context of present day under developed countries, the situation is different. With the latest techniques and equipment being available from advanced countries, it has become necessary to obtain the requisite skills and technical know-how to avail of opportunities so provided. Improvements in skills and knowledge, which can be acquired through education, have become a prerequisite to economic growth in the modern world. In fact a positive correlation is seen to exist between per capita incomes (GNP) and adult literacy rates. In the high income countries adult literacy rates are 98 to 100% while in low-income countries the percentage ranges from 10% to 60%.

Since the resources available to developing countries are to be carefully allocated on various programmes of development, investment in education has to be judiciously planned. The proportion of GNP to be allotted to education
assumes relevance. Besides this, priorities have to be laid down regarding the type of education in which investible resources are allocated - whether universal primary education is essential, secondary education or an extensive system of higher education or vocational education and training. Much depends on individual requirements of the countries concerned. While in some countries highly trained technical personnel may be required (necessitating their import) to tap natural resources, in others it may be necessary to infuse new skills and knowledge in the agricultural sector. It is widely felt that "after overcoming the immediate bottlenecks of scarce personnel in specific key occupations, the education system should then be devised to provide a balance between general education, prevocational preparation, and vocational education and training."^12

**Returns to Education:** Studies are available now in abundance about the returns to education and of various levels of education. Earlier studies (in 1970s and 1980s)^13 revealed that returns to primary education are largest and returns to higher education are lowest. But more recently (in 1990s)^14 studies have revealed that returns to primary education have come down and returns to higher and specialised education have gone up. This is because of spread of education has lowered the returns in primary education and opening up of specialised courses has put a premium on higher education.

In the two articles published in *The World Bank Research Observer* (August 1995), Eric A. Hanushek^15 and Michael R. Kremer^16 have demonstrated that (i) good education helps in development, while at the same time resources in many countries are being spent on education in unproductive ways, and (ii)

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15 Ibid.
certain types of expenditures on education do improve student achievement, and that in turn raises its contribution in the development process.

Hanushek, however, maintains that education is a very inefficient exercise across the globe, and strong evidences suggest that too much is being paid for the performance obtained from educational institutions. This is more so in regard to higher education in countries like India where quality in this section of education leaves much to be desired.

Several recent empirical studies\(^\text{17}\) have well documented the contribution of education and additional (higher) education, over primary schooling, to economic growth. Estimates of the contribution of education to economic growth in various regions of human world are shown in Table 2.4. These range from 25 percent in Canada to 12 percent in Kenya, and from 17 percent in Africa to 5 percent in Latin America.

The correlation analysis of educational progress and economic development in certain countries/states also reveals that there is a weak relationship between the two and that education has not contributed to economic growth. The low contribution of education (particularly higher education) to economic growth in certain countries such as Nicaragua, Cuba, Sri Lanka and also in the State of Kerala in our country is largely because the complementary economic and social policies necessary to sustain human development are often missing.\(^\text{18}\)

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### Table 2.4
Contribution of Education to Economic Growth

<table>
<thead>
<tr>
<th>Country/Region</th>
<th>Growth rate Explained by Education.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td></td>
</tr>
<tr>
<td>Canada</td>
<td>25.0</td>
</tr>
<tr>
<td>Ghana</td>
<td>23.3</td>
</tr>
<tr>
<td>India</td>
<td>27.0</td>
</tr>
<tr>
<td>Argentina</td>
<td>16.5</td>
</tr>
<tr>
<td>Nigeria</td>
<td>16.0</td>
</tr>
<tr>
<td>United States</td>
<td>15.0</td>
</tr>
<tr>
<td>Belgium</td>
<td>14.0</td>
</tr>
<tr>
<td>Kenya</td>
<td>12.4</td>
</tr>
<tr>
<td>Region</td>
<td></td>
</tr>
<tr>
<td>Africa</td>
<td>17.2</td>
</tr>
<tr>
<td>Asia</td>
<td>11.1</td>
</tr>
<tr>
<td>North America &amp; Europe</td>
<td>8.6</td>
</tr>
<tr>
<td>Latin America</td>
<td>5.1</td>
</tr>
</tbody>
</table>


Note: It may be noted from this Table that highest contribution of education to economic growth is in India.

Education without adequate remunerative and productive jobs rarely leads to sustainable economic growth. At higher education level, general education in liberal arts matters less and in specialised scientific branches matters more. There is evidence that the type of higher education provided matters for economic growth. The World Development Report, 1998-99 says,

"The properties of students majoring in mathematics, science and engineering (but not the proportion majoring in pre law) has been found to be positively associated with subsequent growth rates, suggesting higher returns to educational investment in these fields than in others. The content of education thus appears important for countries seeking to develop new technologies suitable for local conditions." (P.43)
Agricultural universities have made significant contribution in India's economic development as in some other developing countries like Malaysia and the Philippines. Bulk of student researchers in agricultural universities is engaged in research and development activities.

**Multiple Roles in Development**

Universities thus serve a multiplicity of roles - not only enhancing the skills of future workers but also introducing new knowledge and adapting knowledge produced elsewhere. The fact that universities throughout the world package these activities - teaching and research, suggests that there are strong complementarities between them. But this very multiplicity of activities can also give rise to conflicts of interest between those who supply and those who demand universities' output. Competition among universities should ensure that curricula will be more attuned to the perceived demand, and students adopt faster to changing technologies. For instance, having long ago added computer science as a field of study, universities in the industrial countries have now integrated the use of computers throughout the curriculum. Students from developing countries, to seek further training overseas, are at a severe disadvantage, as the quality of education they receive at home falls far short of what they later encounter abroad.¹⁹

A recent study²⁰ reveals positive association between enrolment growth in general higher education and real per capita income in India for the period 1951-97. Covering a period of eight Five Year Plans along with the intervals of Annual Plans in between 1951 to 1997, this study concludes that the rank correlation between enrolment growth in general higher education and real per capita income for the period 1951 to 1997 comes to 0.2 implying a positive relationship. The

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author infers that all through this period the progress in enrolment in general higher education has matched with the economy's growth and has been mutually influencing each other resulting in low direct nexus between them.

The above however is only a vague conclusion and does not in any way weaken the earlier observations that technical and specialised higher education contributes relatively more to economic development of the country. But general higher education also cannot be ignored in view of its linkages with lower levels of education and the economy and society in general.

Higher education creates noble values - tolerance and humanism as Nehru put it long back. Even now emphasizing on higher values for development while delivering the Kale Memorial Lecture, S.Venkitaraman, former governor of the Reserve Bank of India stressed: “Let us not rule out every prospect of development just because it does not satisfy the criterion of financial profits. True, the test of pecuniary return is needed. But the vision of greatness is even more essential” (Emphasis added).  

Surely this vision of greatness is created by higher education of social sciences, humanities and liberal arts and viewed thus, they do play a pivotal role in the development process of the country.

**Changing Role of Higher Education**

The role of higher education in development is changing over time because objectives and functions of higher education are under rapid metamorphosis. It is perceived that the best way higher education can serve the purpose of development and society is to prepare people through diversified courses capable of tackling the emerging problems that beset them. Nowadays these problems are moral and ethical on the one hand, and materialistic on the other, which are related to the basic necessities of life, viz., food and nutrition,

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health and sanitation, housing and shelter. These basic needs can only be satisfied through economic activity and the higher education system is harnessed to provide the necessary skills and expertise along with healthy moral values to run the system in order that these basic needs may be supplied. In a static and subsistence economy the role of higher education may be limited only to mind and character but in a modern system - an information based industrial and commercial economy, higher education has to cater to many requirements of development and sustainability.

Thus, in the present situation higher education cannot justify its existence by providing only higher academic learning for mental or spiritual development, it has to convey the necessary skills for economic development in order that natural resources are explored and exploited and their wasteful use is checked, goods produced, stored and distributed efficiently, services managed well for the benefit of population at large and resources conserved for future generation.

Surely, generation of such skills would not only enable solutions to be found to present problems but also prepare the recipients of higher education face successfully the complex and dynamic problems of the future.

Thus, the relationship between higher education and development is not that simple. These viewpoints stand out in this regard:

a) That education provides people with the skills to develop and manage the economy and related services and therefore, investment in education is an investment in human capital.

b) That higher education provides not only skills for performing vocational tasks, but also promotes social values by encouraging upward mobility in the society, and thus acts as a screening device to select the most competent and ablest people for the best social roles in jobs.

c) That productivity is an attribute to jobs, not of people (people are matched to jobs by criteria which may be associated with
education) but higher education is not at its own a determinant of productivity. It is this approach which goes by the name “labour market segmentation theory”.

d) That the idea of correspondence between higher education and social role is an illusion existing only in the minds of graduates and has little to do with their performance in actual life. The usual practice of recruiting the educated for certain jobs on the basis of their educational qualification leads new job seekers to believe that they are entitled to such jobs.

Thus, on the whole we find that higher education is the main instrument for development and transformation. Universities can and should exercise a great influence on societal transformation and industrial development. Their output should reflect the quality of human resource development programmes. No society can be made prosperous and sustainable without human resource development, which depends largely on the vitality of higher education. Again the level of economic development of a country depends on an adequate and up-to-date involvement of technology. Universities have to come up to meet this challenge.

The benefits that both industry and university can derive from industry-institution interaction are fairly well known and well documented. It is suggested that for linking higher education with development, India’s industries, including public undertakings, should adopt some educational institutions as their own R & D house, which will render the research pursuits of our education

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system rewarding. A beginning has already been made in this direction, by some industrial houses. It needs to be made more extensive.

At the same time, higher education is required to be more flexible in nature, more general in content, to be adaptable to changing skills requirements to prepare "educable" (adaptable) rather than educated citizens, to cope with ever dynamic technological developments. Higher education needs to be diversified in delivery method, which will take advantage of developments in the labour market.

Since higher education and industry are inextricably interwoven in the modern world and industrial sector utilises the output of higher educational institutions- the graduates and the research findings, it is expected on its part that it will provide necessary feedback and resources for modernisation and development of higher education programmes.

Education and industry (which has become cine qua non for development in the globalised economy) are thus interdependent for supply of inputs that contributes to their productivity and performance. Since competitiveness of industry is determined by factors like utilisation of new knowledge and technology, the programmes of higher and specialised educational institutions are viewed from commercial and profit angles by industry and business. There is therefore, a strong justification for industry to effectively contribute to education as well, as the latter does to the former.

Due to inadequate investments in education, human competence level, howsoever measured, is lower for India as compared to its competitors. Therefore, in order to promote development, strong education industry linkages are important, such that they mutually benefit from each other and reinforce in the development of each other.
Summary and Conclusions

Thus both theoretically and empirically the following points emerge from this chapter:

1. There is a positive correlation between education and development, and higher education leads to higher earnings and further development.
2. Income differentials do exist between earners with different levels of education. Higher education is found to give higher earnings.
3. A significant part of growth in national income is explained by investment in education (human capital).
4. Several direct and indirect benefits accrue to the recipient of higher education.
5. The connections between higher education and economic development are found to exist in many ways. It has shifted the attention from physical capital to human capital.
6. Role of higher education is instrumental in economic development. It is consumption, private investment and social investment and holds crucial importance in all the three ways.
7. Spillover benefits of higher education to the economy are far varied and far-reaching and significant in many ways.
8. Just as benefits of education are of many types, direct and indirect, private and social or national etc., so also the cost components, which are of private and social or institutional in nature. Taking into account all these, higher education emerges as an expensive enterprise.
9. Intangible benefits of education are difficult to identify, leave alone their quantification and measurement vis-à-vis costs of higher education.
10. Specialised and technical education is found to yield more to development than general higher education.
11. Education (including higher education) is a very inefficient exercise across the globe. Little results are obtained at higher costs. The inefficiency lies at two
levels - inefficiency of the educational institution and the inefficiency of the higher education system as a whole.

12. Contribution of higher education to economic development is found to vary from country to country. Incidentally it is one of the highest in India.

13. In many countries, and in some states in India, higher education is not found to contribute to economic development to the extent desired.

14. Science, engineering, mathematical and agricultural streams of higher education are found to be more beneficial from the viewpoint of economic development.

15. Higher education (general category) enrolment and per capita income in India over the planning period also reveal a positive association.

16. Higher education not only reinforces the abilities of pecuniary gains, it also inculcates visions of greatness, which are nothing less important for national development.

17. New challenges of skill generation make higher education more complex to answer to the developmental requirements of the society.

18. Higher education is an integral part not only of human capital theory but also of labour market segmentation theory.

19. Higher education and industry linkages are important to meet new challenges of development in future. Vast potential exists in India in this regard.

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Chapter III

Growth of Higher Education
In Uttar Pradesh